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August 18, 2011

Karl Simon, Director
Compliance and Innovative Strategies Division
Office of Transportation and Air Quality
United States Environmental Protection Agency
1200 Pennsylvania Avenue NW
Washington, DC 20460

Re: Request for Updated Scheduled Maintenance Intervals for Selective Catalytic Reduction Technologies for Model Years 2012 and Later

Dear Mr. Simon:

Pursuant to 40 C.F.R. § 86.094-25(b)(7)(ii), Chrysler Group, LLC, Cummins Inc., Daimler Trucks North America LLC, Detroit Diesel Corporation, Ford Motor Company, Mack Trucks Inc., PACCAR Inc., UD Trucks Corporation, and Volvo Group North America, LLC, (collectively the "SCR Engine Manufacturers") hereby request revised scheduled maintenance intervals for SCR technologies for model years 2012 and later. Specifically, the SCR Engine Manufacturers request that EPA approve the use of the 1:1 diesel exhaust fluid (DEF) to fuel ratio for vehicles with a DEF level indicator, in addition to vocational vehicles, and that EPA grant its approval of the reduced SCR maintenance intervals for an indefinite time period or until a point in time when there is compelling evidence that the DEF replenishment interval should be revisited.[1] This approval is necessary and appropriate to reflect current and anticipated changes in vehicle designs, significant changes in inducement strategies, and the increased availability of DEF that have arisen since EPA's November 9, 2009 Approval of New Scheduled Maintenance for Selective Catalyst Reduction Technologies (the "2009 Notice").[2]

I. Applicable Regulatory Requirements

[1] For the SCR Engine Manufacturer companies, this request updates their position from that contained in the earlier Engine Manufacturers Association's renewal request dated June 13, 2011. For all of the reasons set forth in this petition, the SCR Engine Manufacturers suggest that the distinction based on the presence of a constantly viewable DEF level indicator (for the 3:1 ratio) is unnecessary. The many warnings and inducements that manufacturers have built into their vehicles obviate the need for this distinction.

[2] Control of Emissions from New Highway Vehicles and Engines: Approval of New Scheduled Maintenance for Selective Catalyst Reduction Technologies, 74 Fed. Reg. 57,671 (Nov. 9, 2009).

Based on certain conclusions in the 2009 Notice, EPA requires manufacturers to petition the Agency under 40 C.F.R. § 86.094-25(b)(7)(ii) (hereafter, just "(b)(7)") for approval of DEF refill rates that are less than the standard regulatory interval for catalyst replacement or maintenance (150,000 miles, or 4,500 hours, for medium and heavy heavy-duty diesel engines).[3] Section (b)(7) sets forth the required contents of a petition for an alternative maintenance interval, and establishes the threshold criteria EPA will use to determine whether an interval shorter than the regulatory default will be approved.

A. Content of the Petition

A petition for an alternative maintenance interval under (b)(7) must include the following five pieces of information from the petitioning manufacturers:

i) Need for Maintenance: an explanation of why the maintenance is "technologically necessary to assure in-use compliance with the emission standards";[4]

ii) Category Recommendation: a recommendation as to whether the maintenance is emission-related or non-emission-related, critical or non-critical;[5]

iii) Maximum Feasible Interval Reference Point: information on "the maximum feasible maintenance interval";[6]

iv) Recommended Interval: the specific "interval suggested" by the manufacturers;[7] and

v) Other Information Supporting Reasonableness of Suggested Interval: "supporting data or

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[3] In the 2009 Notice, EPA indicated that the replenishment of DEF is either the "adjustment, cleaning, repair, or replacement" of the "catalytic converter" or an "add on emissions-related component," which would make DEF refills subject to these maintenance regulations. 74 Fed. Reg. at 57,672; *see* 40 C.F.R. § 86.004-25(b)(4)(iii). DEF replenishment is not typical maintenance, nor "adjustment, cleaning, repair, or replacement," and is more clearly analogous to periodic vehicle refueling. The concept of DEF replenishment is also not included in the words used to define "scheduled maintenance" at 40 C.F.R. § 86.084-2, which states that it means "adjustment, repair, removal, disassembly, cleaning, or replacement of vehicle components or systems which is performed on a periodic basis to prevent part failure or vehicle (if the engine were installed in a vehicle) malfunction, or anticipated as necessary to correct an overt indication of vehicle malfunction or failure for which periodic maintenance is not appropriate." Given that the maintenance regulations were simply not written to contemplate an emissions control technology whose normal operation requires replenishment of a consumable, the SCR Engine Manufacturers have participated in the (b)(7) process as a mechanism for working with the Agency to introduce a new form of emissions control, in a spirit of constructive cooperation.

[4] 40 C.F.R. § 86.094-25(b)(2), (b)(7)(ii).

[5] 40 C.F.R. § 86.094-25(b)(7)(ii).

[6] *Id.*

[7] *Id.*

other substantiation" for the interval suggested, which becomes a part of the "industry data and any other information available to EPA" that enables EPA to establish "a technologically necessary maintenance interval."[8]

Much of this information was submitted with the initial 2009 (b)(7) petition and was confirmed by EPA's 2009 Notice, and therefore needs no further elaboration here. Specifically, EPA has already concluded that replenishment of DEF is "technologically necessary" critical emission-related maintenance, and that the 1:1, 2:1, and 3:1 ratios were "maximum feasible" maintenance intervals based on information available in 2009. There has been no change in either the need for DEF replenishment or designation of the category of maintenance since 2009. This petition asserts that the 1:1 DEF to fuel ratio now reflects the maximum feasible interval based on reasonable tank sizes, given the latest information available regarding SCR systems and DEF availability.

B. Threshold Criteria for Approval of Reduced Maintenance Interval

The regulations also provide that EPA will set "a technologically necessary maintenance interval."[9] The general maintenance regulations provide further guidance on what "technologically necessary" means where they provide that "[a]ny emission-related maintenance" "must be technologically necessary to assure in-use compliance with the emission standards."[10] Thus, under (b)(7), EPA first makes a threshold determination that the manufacturers' recommended scheduled maintenance, at an interval shorter than the regulatory default, is "technologically necessary to assure in-use compliance with the emission standards."[11]

II. EPA's 2009 Conclusions

While the (b)(7) regulations establish what information must be included in a petition and that a reduced interval will only be granted for maintenance that is "technologically necessary" to assure in-use compliance with the emission standards, EPA's 2009 Notice established the specific factors that EPA uses to determine what a reasonable and appropriate technologically necessary interval is for DEF replenishment. The (b)(7) regulations were originally developed to address mechanical engine technology that is subject to wear, but which is expected to last the full useful life of a vehicle, or a significant portion of that useful life. In contrast to those mechanical maintenance items, SCR systems use a consumable that is subject to regular periodic replenishment by design. The 2009 Notice specifically addressed the unique nature of liquid DEF replenishment, and the need to strike a reasonable balance between conflicting design goals. In doing so, the 2009 Notice established that EPA's determination is based on the "approximate" "maximum feasible maintenance intervals

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[8] *Id.* (emphasis added).

[9] *Id.* (emphasis added).

[10] 40 C.F.R. § 86.094-25(b)(2).

[11] Thus the maintenance itself must be technologically necessary for compliance. EPA's 2009 Notice established that the replenishment of DEF tanks at an interval of less than 150,000 miles, or 4,500 hours, is in fact "technologically necessary" to assure in-use compliance. 74 Fed. Reg. at 57,673.

associated with reasonable DEF tank sizes."[12] More specifically, EPA's Notice discussed several key factors that EPA uses to determine what is reasonable and appropriate, and explained how each is used in the (b)(7) process.

A. Technological Necessity of an Interval Less Than 150,000 Miles (or 4,500 Hours)

The regulations use the words "technologically necessary" in two contexts. First, section (b)(2) requires that all maintenance that meets the definition of "emission-related maintenance" "must be technologically necessary to assure in-use compliance with the emission standards."[13] Consistent with this provision, (b)(7)(ii) requires that any alternative interval set by EPA be "a technologically necessary maintenance interval."[14] In other words, once some reduced maintenance interval has been found to be technologically necessary, EPA may only approve an interval that is reasonable and appropriate, in its discretion, based on the information submitted, and other available facts. Thus, the words "technologically necessary" describe the category of maintenance that is allowable, but they do not describe what the specific interval must be. The 2009 Notice clearly established that the periodic refilling of DEF (at less than 150,000 miles, or 4,500 hours) is necessary for SCR technology to assure that emission standards are met in-use.[15] In conclusion the Agency stated: "EPA agrees with manufacturers that the DEF refilling intervals requested are technologically necessary. EPA knows of no SCR technology for any heavy-duty engine application that is yet capable of attaining higher mileage without a DEF refill."[16] DEF replenishment remains as "technologically necessary" today as it was in 2009, and EPA should continue to allow DEF refills at a frequency of less than 150,000 miles, or 4,500 hours.

Once the "technologically necessary" threshold determination is made for setting a shorter interval, EPA then evaluates the information in the petition, including: i) the maximum feasible interval, ii) the suggested interval, and iii) "other information" to establish the new alternative interval. EPA's regulations do not require that it set alternative maintenance intervals at the maximum level that is technologically feasible. The term "feasible" requires EPA to look at the overall practicality and reasonableness of a particular proposed interval. The maximum feasible interval is used as a point of reference to enable EPA to evaluate the reasonableness of the manufacturers' recommended interval. The maximum possible interval for DEF replenishment is established in each case by the total load capacity of the vehicle in question, the space available for a given DEF tank size, the fuel efficiency and GHG impact of various DEF dosing rates, the desired operating range of the vehicle between fuel and DEF refills, and the impact of extra weight on vehicle performance, safety, and compliance with U.S. Department of Transportation regulatory requirements. DEF tank size must also be balanced against the need to carry cargo, or to enable the vehicle to meet the purpose for which it was built, to determine what is feasible in the most economical way possible while achieving compliance. In EPA's 2009 Notice, EPA explained that

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[12] 74 Fed. Reg. at 57,674 (emphasis added).
[13] 40 C.F.R. § 86.094-25(b)(2).
[14] 40 C.F.R. § 86.094-25(b)(7)(ii) (emphasis added).
[15] 74 Fed. Reg. at 57,672, 57,673-74.
[16] *Id.* at 57,673.

while it may be possible for a line-haul truck to carry the 750-900 gallons of DEF needed to operate for the entire 150,000 mile interval, it would be entirely unreasonable to require the truck to carry 6,750 or more pounds of DEF, because that would reduce cargo capacity by 15% or more.[17] In short, the 2009 (b)(7) process made it clear that the reduced maintenance interval would never be set at the maximum possible interval. Instead, EPA must set a reasonable, feasible interval, in its discretion, based on a variety of factors and all available information.

B. Likelihood of Being Performed In-Use

The 2009 Notice established that once the technological necessity of a lesser interval has been determined, the likelihood of being performed in-use is the most important factor in establishing the precise maintenance interval. First, EPA explained that "minimum service intervals are established in part to ensure that the control of emissions is not compromised by a manufacturer's overly frequent scheduling of emission-related maintenance."[18] Excessive frequency can only compromise emissions control where it creates a risk that the maintenance will not be performed in-use.

Second, EPA explained that while likelihood of being performed in-use was a specific criteria under (b)(6), it was also a factor that was "important to note" with regard to EPA's (b)(7) findings, particularly with regard to "critical emission-related maintenance."[19] EPA then concluded that it was "reasonable to base the DEF refilling event on diesel refueling intervals given that it is likely that the DEF refill maintenance would be undertaken at the time of fuel refill due to DEF infrastructure developed at diesel refueling stations."[20]

Most importantly, EPA used the likelihood of performance in-use as the exclusive factor for determining which of the three alternative maintenance intervals would be applicable to a particular type of heavy-duty on-highway ("HDOH") vehicle. Specifically, EPA established three allowable maintenance intervals in 2009 that were expressed as a ratio of the DEF tank range to the fuel tank range, specifically 1:1, 2:1, and 3:1. The only relevant difference between the applications eligible for the three different intervals is the likelihood of being refilled in-use. Specifically, centrally fueled vocational vehicles were expected to be the most likely to be refilled in-use, and the interval was set at 1:1. Vehicles with a constantly viewable DEF level indicator were anticipated to be the next most likely to be refilled, and the interval was set at 2:1. Finally, vehicles without a constantly viewable level indicator were thought to be less likely to be regularly filled than the other categories, and a longer interval of 3:1 was established.

C. Other Data and Information

As noted above, (b)(7) requires EPA's determination to be "based on industry data and any

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[17] 74 Fed. Reg. at 57,673.
[18] *Id.* at 57,672.
[19] *Id.* at 57,673.
[20] *Id.*

other information available to EPA."[21] EPA's 2009 Notice focused on two relevant categories of other industry data: (1) the technological feasibility of different DEF tank sizes; and (2) the availability of DEF to on-highway users. EPA made two related findings of fact that remain accurate today. First, EPA concluded that DEF tank sizes were limited by weight and space constraints, and that tanks larger than those recommended by manufacturers were not reasonably feasible. Specifically, DEF tanks capable of a 150,000 mile range were "clearly not technologically feasible in light of the weight and space demands and constraints on heavy-duty trucks."[22] EPA also explained that "longer intervals than those requested by the manufacturers would require DEF tanks that are too large or too heavy to be feasibly incorporated into vehicles. . . . Because of inherent space and weight constraints in the configuration and efficient operation of heavy-duty vehicles, there are size limits on the DEF tanks."[23] In addition, EPA also focused on DEF availability in concluding that it was "reasonable to base the DEF refilling event on diesel refueling intervals given that it is likely that the DEF refill maintenance would be undertaken at the time of fuel refill due to DEF infrastructure developed at diesel refueling stations."[24]

Thus, although the phrase "likelihood of being performed in-use" is not used in (b)(7), the SCR Engine Manufacturers agree that that has been, and should continue to be, the primary factor in EPA's assessment of what a reasonable proposed maintenance interval for DEF replenishment should be.

III. Significant Changes to Key Factors Have Occurred Since 2009, All of Which Support Expanded Use of the 1:1 Tank Ratio

The 2009 Notice recognized that EPA's initial (b)(7) approval may need to evolve as DEF infrastructure and SCR technology change over time. EPA explained the following:

> The Agency has limited this approval to model years 2009 to 2011 due to the expectation that SCR-related technologies and the urea infrastructure will continue to develop and mature, and EPA plans to revisit this category of vehicles to determine appropriate future intervals. Should manufacturers continue to believe that the identified interval or other intervals are technologically necessary or otherwise appropriate after the 2011 model year, we expect them to take this up with the Agency in a timely manner.[25]

Significant changes have occurred with respect to each of these key factors, as discussed below. In each case, the changes support the expanded use of the 1:1 tank ratio as requested by the SCR Engine Manufacturers.

A. Likelihood of Being Performed In-Use

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[21] 40 C.F.R. § 86.094-25(b)(7)(ii).
[22] 74 Fed. Reg. at 57,673.
[23] *Id.*
[24] *Id.*
[25] *Id.* at 57,674 (emphasis added).

In the 2009 Notice, EPA indicated that it expected that in most cases, DEF would be refilled at each refueling stop.[26] Two developments since 2009 have further increased the likelihood of DEF replenishment at each and every refueling stop: (1) more severe inducement strategies; and (2) increased availability of DEF.

1. More Severe Inducements

EPA's 2011 Draft SCR Guidance[27] on SCR inducement strategies makes it essentially impossible for an SCR vehicle to operate without regular DEF replenishment. Although this is also true of vehicles certified under earlier guidance, the dramatic increase in the severity of DEF level inducements from 2009 to the present is extraordinary and must be taken into account in approving updated maintenance intervals.

Under the December 2009 SCR Guidance,[28] EPA stated that "[i]n determining strategies that are sufficiently onerous to cause the driver to replenish the DEF tank and minimize any adverse emission impact, manufacturers can consider strategies that begin to degrade performance prior to the DEF tank being empty and that progressively become more onerous as the DEF tank becomes empty." EPA further explained: "Possible approaches for the manufacturer to degrade performance include a derate of the engine's maximum available engine torque of a sufficient magnitude for the operator to notice decreased operation (a derate of at least 25% is likely to be needed for such an effect) and progressing to further degradation that could include operation of the engine being disabled or severely restricted, implemented in a manner designed to prevent operation without DEF. EPA recognizes that there may be safety concerns regarding a complete disablement of the engine or severe degradation occurring while the vehicle is moving, and therefore believes that such degradation would best be initiated at the time of refueling, parking or restart."[29]

In the 2011 Draft SCR Guidance, EPA proposes that, when the DEF tank is empty, final inducement consisting of a 5 mph maximum vehicle speed or engine shutdown / idling-only limitation be imposed <u>while the vehicle is in operation</u>.[30] If manufacturers choose to implement final inducement only when the vehicle is stopped in a safe location (identified by a refueling, 60-minute idling, or key-off event), they must design their engines to meet <u>additional characteristics</u>, which include imposition of a severe inducement prior to triggering final inducement. "The severe inducement will consist of an <u>engine derate, a vehicle speed limitation, or a limitation on the number of engine restarts</u>."[31] EPA provides, as an example of an acceptable severe inducement, an engine

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[26] The 2009 Notice explained that "operators are expected to refill the DEF a[t] each diesel fuel refilling event." 74 Fed. Reg. at 57,674.

[27] Control of Emissions from New Highway Vehicles and Engines; Guidance on EPA's Certification Requirements for Heavy-Duty Diesel Engines Using Selective Catalytic Reduction Technology ("2011 Draft SCR Guidance"), 76 Fed. Reg. 32,886 (June 7, 2011).

[28] Revised Guidance for Certification of Heavy-Duty Diesel Engines Using Selective Catalyst Reduction (SCR) Technologies ("December 2009 SCR Guidance"), CISD-09-04 REVISED, at 5 (Dec. 30, 2009).

[29] *Id.*

[30] 76 Fed. Reg. at 32,894.

[31] *Id.* (emphasis added).

torque derate of 40 percent, which should occur when there is enough DEF in the tank to last one full day of operation, or with 10 percent reserve in the tank.[32]

In addition, in light of these severe inducements, it is reasonable to expect that a driver with a 1:1 tank ratio will operate under a firm discipline that the DEF tank must be refilled every time the fuel tanks are filled, as opposed to a driver with a 2:1 or greater tank ratio who may become accustomed to filling the DEF tank only when necessary, and is therefore more likely to rely on gauge levels, warnings, and inducements to trigger refills.

2. Increased Availability of DEF

In 2009, centrally fueled fleet vehicles were viewed as the most likely to have DEF available at each refueling stop. DEF infrastructure has developed significantly since 2009. Today, DEF is as readily available at truck stops and other refueling locations as it was previously expected to be at central fleet refueling centers. Therefore there is no longer any reason to distinguish between centrally fueled operations and line-haul operations from a DEF availability perspective. As EPA noted in its 2011 Draft SCR Guidance: "DEF infrastructure and sales volume have continued to grow since introduction of 2010 model year trucks equipped with SCR systems. . . . DEF is now available for sale in every state at truck stops and service facilities, and is available for delivery to fleet locations, as well."[33] EPA also stated: "The continually increasing DEF infrastructure and sales volume have resulted in improved DEF availability along major truck routes as well as other locations. . . . Increasing demand supported by sales volume helps drive the continuing expansion of DEF infrastructure."[34] With widespread availability of DEF, drivers can refill their DEF tanks at the same time that they refuel with diesel, so that a 1:1 ratio is now as appropriate for vehicles with a DEF level indicator as it is for vocational vehicles.

B. Feasibility of Other Tank Sizes

In the 2009 Notice, EPA concluded that the specific tank sizes associated with the 1:1, 2:1, and 3:1 ratios were the maximum reasonably feasible "in light of the weight and space demands and constraints on heavy-duty trucks."[35] EPA explained that:

> Because of inherent space and weight constraints in the configuration and efficient operation of heavy-duty vehicles, there are size limits on the DEF tanks.
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> . . . The extra weight associated with the DEF required to meet the 2:1 or 3:1 refill intervals . . . represents a significant challenge to manufacturers seeking to meet both weight and size requirements for their vehicle designs. EPA believes that in light of the existing tight space constraints and the overall desire to maximize cargo-carrying capacity to minimize emissions and meet consumer operational demands, and the built-in DEF tank size buffer to insure DEF refills, that the DEF tank sizes associated with the 2:1 and 3:1 refill intervals are technologically necessary. EPA

[32] *Id.*

[33] 76 Fed. Reg. at 32,887.

[34] *Id.* at 32,891.

[35] 74 Fed. Reg. at 57,673.

> believes that requiring tank sizes above these ratios will cause increases in space constraints and weight that would not be appropriate for these vehicles.
>
> . . . EPA believes that longer refill intervals than those noted above would require larger and heavier DEF tanks, and the design and engineering work performed by manufacturers thus far indicate that the recommended DEF refill intervals noted above approximate the maximum feasible maintenance intervals associated with reasonable DEF tank sizes.[36]

As noted above, the only reason EPA had for imposing the greater burden of 2:1 and 3:1 tank ratios on manufacturers was the belief that those vehicles had a lower likelihood of being refilled in-use than vocational trucks. Because that is no longer true, the 1:1 tank ratio would be the maximum reasonably feasible DEF tank size for other vehicles with an equal likelihood of being refilled in-use.

C. Impact of New HDOH GHG Standards

Several significant regulatory and engineering developments since 2009 have further increased the size and weight constraints associated with the previously approved tank sizes. First, EPA has announced new fuel economy standards for HDOH trucks, and manufacturers have moved to voluntarily increase the fuel efficiency of their vehicles in advance of the effective dates of those regulations.[37] Within these regulations, EPA recognizes the impact of weight savings on fuel efficiency and GHG emissions. In addition, manufacturers have developed innovative new DEF dosing strategies to reduce CO_2 emissions. These new strategies may involve increasing the DEF dosing rate. Increasing the DEF dosing rate also makes it more and more difficult to satisfy a 2:1 tank size ratio without increasing the size of the DEF tank above the size EPA previously considered the maximum reasonable size. For this reason, if the application of the 1:1 tank ratio is not expanded, EPA will effectively be mandating larger DEF tanks, with their accompanying weight increase, in order to accommodate technology advancements developed to reduce CO_2 emissions—tanks that are larger than the tanks EPA determined to be the maximum reasonably required in 2009. In addition, this could inadvertently cause manufacturers to restrict application of the most fuel efficient engines to vehicles that have reduced range between fuel and DEF refills, such that they will be unattractive to the line-haul fleets that consume the most fuel.

In addition, future GHG requirements that will take effect (2013 for the early compliance option) in the time frame of the requested approval will also make it increasingly difficult to accommodate 2:1 tank sizes in line-haul truck applications. Specifically, improved aerodynamics and excess weight reductions are critical to meeting the upcoming GHG requirements. Requiring trucks to carry completely surplus DEF, and increasing that burden, simply cannot be justified in the face of EPA's new GHG requirements.

Allowing manufacturers greater flexibility in sizing their DEF tanks has analogies with other fuel efficiency improvement and GHG emission reduction strategies. With the 1:1 ratio option,

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[36] *Id.* at 57,673-74.

[37] *See* Greenhouse Gas Emissions Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles, 75 Fed. Reg. 74,152 (proposed Nov. 30, 2010).

manufacturers who choose to reduce their DEF tank sizes will realize a corresponding weight reduction.[38] EPA has recognized that reductions in vehicle mass, such as by reducing the size of the DEF tank and amount of excess DEF carried, reduce fuel consumption and GHG emissions: "Reductions in vehicle mass reduce fuel consumption and GHGs by reducing the overall vehicle mass to be accelerated and also through increased vehicle payloads which can allow additional tons to be carried by fewer trucks consuming less fuel and producing lower emissions on a ton-mile basis."[39] For example, EPA has noted that a change in tire design can result in a significant weight reduction: "A tractor's empty curb weight can be reduced from the replacement of dual tires with single wide tires and with the replacement of steel wheels with high strength steel or aluminum. Analysis of literature indicates that there is opportunity to reduce typical tractor curb weights by 80 to 670 pounds, or up to roughly 3 percent, through the use of lighter weight wheels and single wide tires . . . ."[40]

Manufacturers need to be able to use the full array of available options to meet the newly finalized GHG standards and to improve the real-world fuel economy for their HDOH customers (including off-cycle operations). EPA's policies should allow—if not encourage—increased DEF dosing, which can provide a significant CO_2 benefit (for example, by allowing manufacturers to reduce the use of EGR). Increased dosing means increased DEF tank sizes unless the maintenance intervals are adjusted. Not only would increased DEF tank sizes be larger than those previously found to be the maximum feasible, but they would work against the CO_2 benefits manufacturers are trying to attain, by adding weight and making it harder to achieve improved aerodynamics. With all of the SCR warnings and inducements that have been required since the 2009 petition was granted, the importance of maintaining any particular tank ratio is now negligible. It is critical that EPA not tie manufacturers' hands on CO_2 improvement by imposing arbitrary policies on issues of lesser importance, working at cross-purposes to the goal of CO_2 reduction.

IV. The SCR Engine Manufacturers' Requests

A. Request for Broader Use of the 1:1 Tank Ratio

For all of the reasons set forth above, the SCR Engine Manufacturers hereby request that the 1:1 tank ratio be approved for vehicles that have a constantly viewable DEF level indicator, just as this tank ratio was previously approved for vocational vehicles. In addition to the reasons set forth above, there are additional policy considerations that favor granting this request.

First, in some cases, manufacturers will continue to use the same 2:1 DEF tanks that have already been engineered into existing models, and will use the 1:1 maintenance interval simply to allow increased DEF dosing to improve GHG emissions. In these trucks, the actual tank size ratio will be somewhere between 1:1 and 2:1 (for example, 1.8:1). Alternatively, some manufacturers

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[38] For example, on a line-haul truck with a 300 gallon diesel fuel capacity, assuming a 3% DEF consumption rate, an 18 gallon DEF tank is the minimum required with the 2:1 maintenance interval. However, if the 1:1 maintenance interval is approved, the DEF tank could be as small as 9 gallons, for a weight savings of 81 pounds (assuming a DEF density of 9 lb/gal) compared to the 18 gallon tank.

[39] 75 Fed. Reg. at 74,216.

[40] *Id.* at 74,217.

may use the 1:1 maintenance interval in order to achieve weight reductions and improve GHG emissions by offering combinations of DEF and fuel tank sizes that are not allowed with the 2:1 maintenance interval, as described in section III.C.

In addition, an extraordinary investment of time and capital has been made to develop today's inducement strategies. EPA should recognize this investment, and the increased efficacy of the latest inducements by allowing the broader use of the 1:1 tank ratio. Allowing this flexibility, which is perfectly consistent with EPA's regulations and past decision-making would enable manufacturers to focus their resources on CO_2 reduction developments, rather than requiring the re-engineering of DEF tanks that are already over-engineered for the current generation of vehicles, given the latest inducements and current wide availability of DEF.

B. Request to Extend the Approval of Updated Scheduled Maintenance Beyond Two Model Years

The SCR Engine Manufacturers request that EPA grant its approval for the reduced SCR maintenance intervals for a period longer than two model years and recommend an approval remaining effective indefinitely (until such time as compelling evidence may indicate that the DEF replenishment interval should be revisited). A longer approval time period would provide greater certainty for manufacturers for planning and design purposes, thereby reducing costs and improving design development, and it would reduce the administrative burden on the agency. It would be beneficial for both manufacturers and EPA not to have to renew the (b)(7) petition and approval process every two years.

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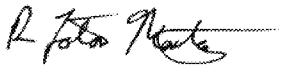
We look forward to your response to this request. Please contact us if we can provide any additional information.

Sincerely,



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